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D. Remarks

Rejection of Claim 14 Under 35 U.S.C. §102(b) based on Bois (U.S. Patent No. 4,679,304).

Applicant's claim 14 invention is directed to a method that includes:

- 5 a) forming a first oxide film on a surface of a semiconductor substrate;
- b) depositing a stacked film different from the first oxide film and including a first layer on the first oxide film;
- c) etching the stacked film and the first oxide film to form a plurality of stacked film patterns arranged on the semiconductor substrate;
- 10 d) oxidizing the semiconductor substrate to form a second oxide film on a surface of the semiconductor substrate sandwiched between adjacent stacked film patterns and a surface of the semiconductor substrate below end portions of the stacked film patterns wherein the second oxide film has a film thickness thicker than the first oxide film;
- e) removing the portion of the second oxide film sandwiched between the stacked film
- 15 patterns and a portion of the underlying semiconductor substrate using the stacked film patterns as a mask to form a trench in the semiconductor substrate; and
- f) filling the trench with an insulating film.

As is well known, a claim is anticipated only if each and every element as set forth in the

20 claim is found, either expressly or inherently described, in a single reference.

The cited reference *Bois* does not show depositing a stacked film different from the first oxide film, as recited in claim 14.

The plain and ordinary meaning of "different" is well understood.

25 1 : *partly or totally unlike in nature, form, or quality* : **DISSIMILAR** <could hardly be more *different*> -- often followed by *from*, *than*, or chiefly British *to* <small, neat hand, very *different* from the captain's tottery characters -- R. L. Stevenson> <vastly *different* in size than it was twenty-five years ago -- N. M. Pusey> <a very *different* situation to the ... one under which we live -- Sir

30 Winston Churchill>

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2 : *not the same*: as a : DISTINCT <different age groups> b : VARIOUS <different members of the class> c : ANOTHER <switched to a different TV program><sup>1</sup>

The rejection of claim 14 is based on the following reasoning:

Mask 4 of Bois is disclosed to be an oxide film (col. 4, line 5). The lower portion of the layer of silicon dioxide 4 is a layer of oxide and the remaining upper portion of layer 4 is stacked film as recited.<sup>2</sup>

The rejection fails to give the language “different from the first oxide film” any weight:

Portions of the mask of Bois are encompassed by the recitation of “different”.  
The claim does not require different materials, for example.<sup>3</sup>

Thus, the rejection argues that the same layer of Bois (mask 4) shows both the formation of a “first oxide film” and a deposition of a “stacked film different from the first oxide film”.

Reference to Bois shows that the claim language “a stacked film different from the first oxide film” cannot be met by the reference.

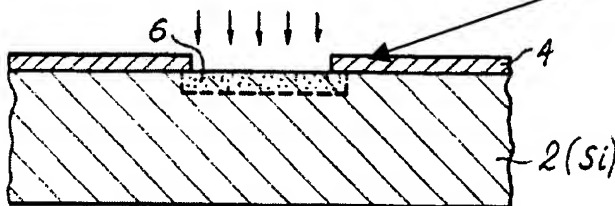


FIG. 1

Mask 4 is produced as single layer.  
Thus, a lower portion of mask 4 is NOT unlike an upper portion layer 4.

That is, lower portion of layer 4 is the SAME as an upper portion of layer 4, thus is not different.

Thus, an “upper portion” of mask 4 cannot be different from the layer cannot be different from a “lower portion”.

Additionally, Applicant’s note that the claim 14 invention is directed to a method having particular steps. The method includes two steps, forming a first oxide film and depositing the different stacked film. Such different steps are not shown in the references. At best, the

<sup>1</sup> Webster’s On-Line Dictionary, at <http://www.m-w.com>, emphasis added.

<sup>2</sup> See the Advisory Action, dated 7/25/03, first continuation page, 5<sup>th</sup> paragraph.

<sup>3</sup> See the Final Office Action, dated 6/2/04, Page 2, Lines 5-6.

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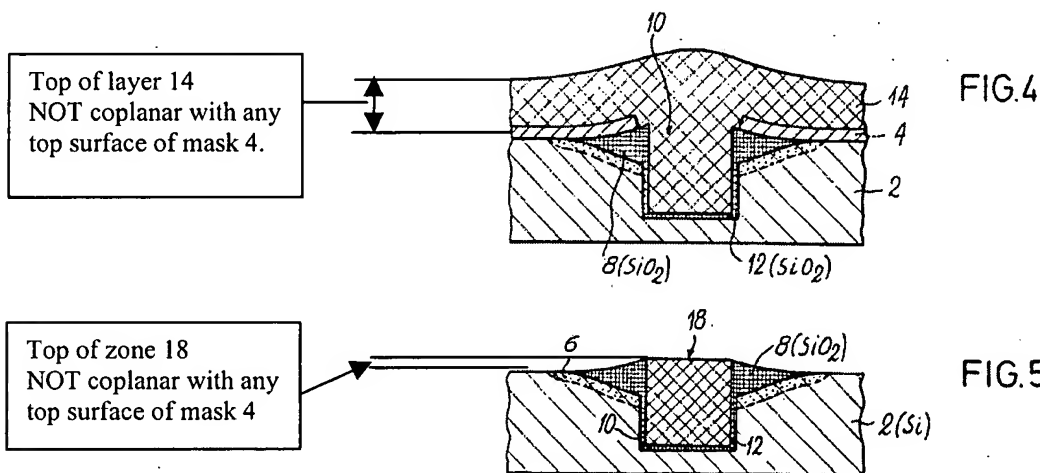
rejection is arguing a material is not different. However, the rejection has completely failed to show different steps, as recited in claim 14.

Because the cited reference does not show all limitations of claim 14, this ground for rejection is traversed.

5 Claim 15, which depends from claim 14, is believed to be separately patentable over the cited reference.

Claim 15 recites that step of filling the trench with an insulating film includes forming the insulating film to have a top surface coplanar with the top surface of the first layer.

10 In *Bois*, a trench is filled with an isolating dielectric. However, such an isolating dielectric is not coplanar with a lower portion of the mask 4. This is clearly shown in the figures of *Bois*.



Thus, claim 15 includes limitations not shown in the cited reference.

15 Additionally, it is noted that the rejection has argued that a “lower portion” of mask 4 corresponds to Applicant’s first layer. However, it is not understood where or how such a lower portion can have a “top surface”, as it is one portion of a uniform layer.

For all of these reasons, this ground for rejection is traversed.

20 Rejection of Claims 16-20 Under 35 U.S.C. §103(a), based on *Bois* in view of *Lai* (U.S. Patent No. 5,106,772).

Claim 16, which depends from claim 14, recites that the manufacturing method further includes

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a) removing the stacked film patterns so that at least the second oxide film below the stacked film patterns remain,

b) subsequently forming a gate oxide film in a region between portions of the second oxide film, and

5 c) forming a first electrode over the gate oxide film and at least a portion of the second oxide film.

As is well known, to establish a prima facie case of obviousness, a rejection must meet three basic criteria. First, there must be some suggestion or motivation to modify a reference or combine reference teachings. Second, there must be a reasonable expectation of success.

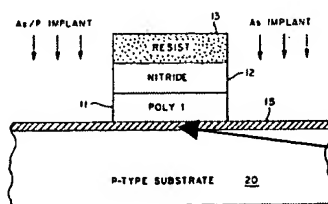
10 Finally, the prior art reference(s) must teach or suggest all claim limitations.

To the extent that this ground for rejection relies on the reference *Bois*, the comments set forth above for claim 14 are incorporated by reference herein. Namely, that claim 14 includes limitations not shown in *Bois*. Accordingly, all limitations are not shown by the cited reference and a prima facie case of obviousness has not been established.

15 In addition, with respect to claim 16, the requisite motivation to combine the references is believed to be lacking, as *Lai* teaches away from the limitations of “removing stacked film patterns and subsequently forming a gate oxide film in a region between portions of the second oxide film”. Alternatively, the combination of references does not show or suggest all the limitations of claim 16.

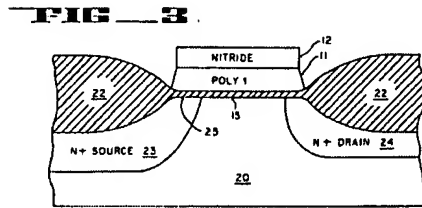
20 The reference *Lai* is directed to an EEPROM having a self-aligned thick oxide (SATO) grown on top of source and drain regions. In the arrangement, the SATO oxide is grown after forming a gate oxide film.

**FIG. 2**



Oxide 15 is formed PRIOR (and not subsequent) to isolation SATO oxide 22.

Oxide 22 is grown SUBSEQUENT to oxide 15.



As best understood by the Applicant, The rejection proposes incorporating the EEPROM of *Lai* as a device for the isolation structures of *Bois*.

5

It would have been within the... skill in the art to combine the teachings of *Bois* and *Lai* to enable EEPROM formation as the device formation step of *Bois*.<sup>4</sup>

However, as would be understood from the above illustrations, if the EEPROM of *Lai* is a device for the isolation of *Bois*, a gate oxide (e.g., oxide 15 of *Lai*) would have to be formed prior to the formation of the isolation structure. Thus, such a layer would be formed prior to and not subsequent to the removal of mask 4 (argued to correspond to Applicant's stacked film pattern).

For these reasons, the cited combination of references does not show all limitations of claim 16, or *Lai* teaches away from Applicant's claim limitations. In either case, a prima facie case of obviousness cannot have been established.

Claim 18, which depends from claim 16, is believed to be separately patentable over the cited references. Claim 18 recites that the insulating film has a top surface even with a top surface of the first electrode. Such a limitation is not shown by the cited combination of references.

20

The rejection admits that *Bois* is silent as to the formation of gates.

*Bois*... does not disclose formation of a... gate... *Lai* teaches provision of an EEPROM between overlapping regions (fig. 5)...<sup>5</sup>

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<sup>4</sup> See Office Action, dated 12/18/03, last paragraph.

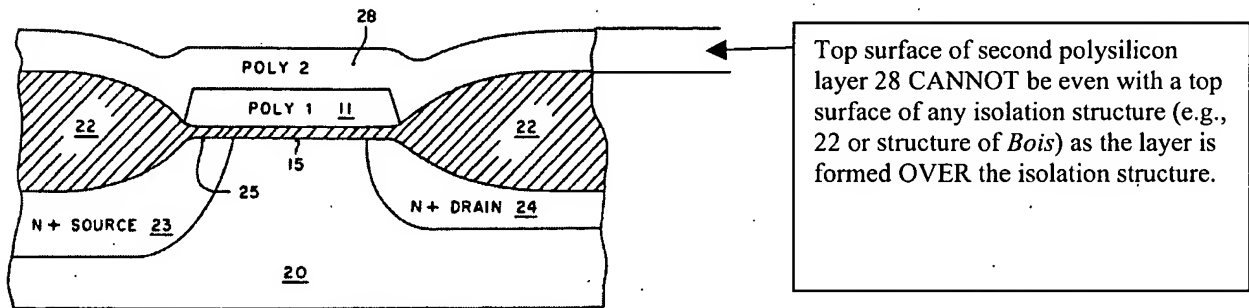
<sup>5</sup> See the Advisory Action, dated 12/18/03, first continuation page, second paragraph from the bottom.

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The rejection then relies on a second polysilicon layer 28 of *Lai* to show a first electrode:

*Lai* teaches gate electrode layer 28 overlapping field oxide regions...<sup>6</sup>

- 5 However, reference to *Lai* shows that a top surface of polysilicon layer 28 cannot be even with a top surface of the insulating film (which fills an isolation trench), as such a layer is formed over any isolation structure.



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Accordingly, because the combination of reference cannot show all limitations of claim 18, a prima facie case of obviousness has not been established for this claim.

<sup>6</sup> See the Office Action, dated 12/18/03, Page 4, last two paragraphs.

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The present claims 8-12 and 14-21 are believed to be in allowable form. It is respectfully requested that the application be forwarded for allowance and issue.

Respectfully Submitted,

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